Colloquium on Solid-State Physics

Department of Physics
SS 2022

Thursday, 23th June 2022, 17.15 h
Lecture Hall III, Department of Physics, Garching

Novel transport and probes of quantum materials based on topological spin textures

Yaroslav Tserkovnyak

UCLA Department of Physics and Astronomy
UCLA, 475 Portola Plaza, Los Angeles, CA 90095-1547*, USA*
Email: yaroslav@physics.ucla.edu

Abstract:

I will discuss new strategies to interrogate and exploit collective dynamics of magnetic systems by driving their topological flavors. Two key ingredients will be at play: (1) identifying topologically conserved neutral quantities that can be controlled by electrical means and (2) tailoring the symmetries of the biased system to enable their injection and detection. After formulating the general ideas, I will discuss several informative examples and comment on potential applications, such as nonchemical energy storage, innate neuromorphic functionalities, and quantum communication.

There will be coffee, tea, and cookies in front of the lecture hall at 17.00 h